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MAINE AGRICULTURAL EXPERIMENT STATION.

BULLETIN No. 22.

SECOND SERIES.

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## INSPECTION OF FERTILIZERS.

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This bulletin is the second to be issued during the year 1895 giving a report of the official inspection of fertilizers. The first bulletin, No. 18, was published on March 9th, and gave the results of the analyses of Manufacturer's Samples. These samples were furnished by the manufacturers for inspection accompanied by an affidavit that they were like the goods which they represented "within reasonable limits."

The samples mentioned in this bulletin are almost wholly those selected by a Station representative at different points in the State from goods which were exposed or offered for sale. These samples were very carefully taken in accordance with the provisions of a law which seeks to guard the rights of the manufacturers, and they certainly represent the particular lots of goods from which they were selected.

The main purpose of selecting samples from the various brands of fertilizers as found in the open market is to ascertain if the goods actually on sale meet the requirements of the manufacturer's guarantees, and whether the manufacturer's samples, whose analyses are published in the Spring bulletin, are to any extent a safe guide in the purchase of fertilizers.

The comparison which follows shows very plainly what are the facts. It may be said that on the whole it appears that the manufacturers intend to deal fairly with the public in the matter of their guarantees, remembering always, of course, that no manufacturer can be held to have guaranteed more than the minimum percentage in which any ingredient is stated to be present.

Notwithstanding certain sarcastic, and we can but believe, unfriendly, criticisms, because this Experiment Station decided to drop the system of commercial valuations, there is no present intention of receding from that decision. There are already indications that farmers who are disposed to put intelligence into their business will themselves, through the information furnished by the

Station, make such calculations as are necessary for their choice of the brand which they can most economically purchase and will in that way understand the situation as they could in no other way ; and it is obvious that to those farmers who are so careless or uninformed as not to do this, the valuations made by the Station are likely to be nothing but a stumbling block.

Any system of aiding the farmer which is merely mechanical and which leaves out of account a proper study on his part of the facts with which he has to deal is false in theory and less helpful in practice than it should be.

The trade values of the fertilizing ingredients in raw materials and chemicals adopted for 1894 by several states, including Connecticut, Massachusetts and New Jersey, are given below.

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS  
AND CHEMICALS.

Nitrogen in ammonia salts.....	18½
nitrates.....	17
Organic Nitrogen in dry and fine ground fish, meat and blood and in mixed fertilizers. ....	16½
in cotton seed meal.....	12
in fine bone and tankage.....	16
in fine-medium bone and tankage.....	17
in medium bone and tankage.....	11
in coarser bone and tankage.....	5
in hair, horn shavings and coarse fish scrap.....	5
Phosphoric acid, water-soluble.....	6
citrate-soluble.....	5½
of dry fine ground fish, bone and tankage....	5½
of fine-medium bone and tankage.....	4½
of medium bone and tankage.....	3
of coarse bone and tankage.....	2
of fine ground fish, cotton seed meal and wood ashes.....	5
of mixed fertilizers insoluble in ammonium citrate.....	2
Potash as high-grade sulphate and in forms free from muriate (or chlorides).....	5¼
as muriate.....	4½

The organic nitrogen in superphosphates, special manures and mixed fertilizers of a high grade is usually valued at the highest figures laid down in the trade values of the fertilizing ingredients in raw materials, namely, 16 1-2 cents per pound ; it being assumed that the organic nitrogen is derived from the best sources, viz., animal matter, as meat, blood, bones, or other equally good forms,

and not from leather, shoddy, hair or any low priced, inferior form of vegetable matter, unless the contrary is ascertained. The insoluble phosphoric acid is valued in this connection at two cents.

The above trade values are the figures at which in the six months preceding March, 1895, the respective ingredients could be bought at retail for cash in our large markets, in the raw materials, which are the regular source of supply.

They also correspond to the average wholesale prices for the six months ending March 1st, plus about 20 per cent. in case of goods for which we have wholesale quotations. The valuations obtained by use of the above figures will be found to agree fairly with the retail prices at the large markets of standard raw materials, such as :

Sulphate of Ammonia,	Dry Ground Fish,
Nitrate of Soda,	Azotin,
Muriate of Potash,	Ammonite,
Sulphate of Potash,	Castor Pomace,
Dried Blood,	Bone and Tankage,
Dried Ground Meat,	Plain Superphosphates.

Below is given a simple rule for calculating the commercial value of the several brands of fertilizers practically on the basis of the above trade values. In order to simplify the method all the nitrogen is valued as organic, and all the potash as the sulphate. This will have the effect of causing a slightly higher valuation of those brands containing nitrogen from nitrate of soda or potash from the sulphate, but will not change the figures sufficiently to affect their usefulness.

*Multiply 16 1-2 cents by the percentage of nitrogen and this product by twenty;*

*Multiply 6 cents by the percentage of available phosphoric acid and the product by twenty;*

*Multiply 2 cents by the percentage of insoluble phosphoric acid and the product by twenty;*

*Multiply 5 1-4 cents by the percentage of potash and this product by twenty. Whenever it is stated that the potash exists chiefly as the muriate, 4 1-2 cents may be used as the price instead of 5 1-4.*

*The sum of these four final products will be the commercial valuation on the basis taken.*

The valuation will be useful only as a means of determining whether one fertilizer has a selling price greater than another in



proportion to some standard of valuation. *Such commercial valuations do not necessarily measure the relative value for use on a particular farm.*

The information to be found in the following tables is classified as follows :

Table I. Description of Manufacturer's Samples.

" II. Analyses of Manufacturer's Samples.

" III. Description of Station Samples.

" IV. Analyses of Station Samples.

" V. Comparison of Guarantee, Manufacturer's Samples and Station Samples.

MANUFACTURERS WHO HAVE COMPLIED WITH THE LAW FOR THE  
YEAR 1895.\*

*E. Frank Coe Co.*, New York N.Y., one brand manufactured at New York, N.Y.

*Great Eastern Fertilizer Co.*, Rutland, Vt., one brand manufactured at New York, N.Y.

*Robert L. Merwin & Co.*, New York, N.Y., one brand manufactured at Biebrich, Germany.

*Walker, Stratman & Co.*, Pittsburg, Pa., four brands, manufactured at Herr's Island, Alleghany, Pa.

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\* Since Bulletin No. 18 was issued, March 9th, 1895.

TABLE I.  
DESCRIPTIVE LIST OF MANUFACTURERS' SAMPLES, 1895.\*

Sample Number.	Brand.	Manufacturer or Dealer.	Place of Business.
1378	Celebrated Special Potato Fertilizer.....	E. Frank Coe Co.....	New York, N. Y.
1383	Great Eastern General Dissolved Bone.....	Great Eastern Fertilizer Co.....	Rutland, Vt.
1384	Highly Concentrated Horticultural Manure.....	Robert L. Merwin & Co.....	New York, N. Y.
1376	Farmer's Friend Manure.....	Nash Manufacturing Co.....	South Brewer, Me.
1377	" " ".....	" " ".....	" " "
1379	Fourfold Fertilizer.....	Walker, Stratman & Co.....	Pittsburg, Pa.
1380	Big Bonanza Fertilizer.....	" " ".....	" "
1381	Potato Special Fertilizer.....	" " ".....	" "
1382	Smoky City Fertilizer.....	" " ".....	" "
1385	Otis Phosphate.....	S. G. Otis.....	Hallowell, Me.

\* Received after March 15, 1895.



TABLE II.

ANALYSES OF MANUFACTURERS' SAMPLES, 1895.\*

Station Number.	Brand.	Moisture.	Nitrogen.		Phosphoric Acid.						Potash.		Station Number.
			% Found.	% Guaranteed.	% Soluble.	% Reverted.	% Insoluble.	% Available.	% Available.	% Total.	% Found.	% Total.	
1378	Celebrated Special Potato Fertilizer.....	10.1	2.00	.....	7.36	1.67	2.38	.....	.....	11.41	4.56	.....	1378
1383	Great Eastern General Dissolved Bone.....	10.2	.13	.....	2.58	13.31	2.23	.....	.....	18.15	.....	.....	1383
1384	Highly Concentrated Horticultural Manure.....	4.00	11.59	12.00	11.71	1.62	—	13.33	13.00	13.33	19.64	21.00	1384
1376	Farmer's Friend Manure.....	10.8	3.04	.....	—	1.83	8.61	.....	.....	10.44	3.68	.....	1376
1377	“ “ [old form].....	15.5	3.05	.....	—	2.47	7.00	.....	.....	9.47	3.68	.....	1377
1379	Four-fold Fertilizer.....	9.7	1.54	1.00	5.97	2.37	2.94	8.34	8.00	11.28	1.32	1.00	1379
1380	Big Bonanza Fertilizer.....	9.6	1.98	1.60	4.32	3.55	2.11	7.87	11.00	9.98	2.55	2.00	1380
1381	Potato Special Fertilizer.....	8.2	2.45	1.60	5.94	2.55	2.92	8.49	9.00	11.41	5.83	5.00	1381
1382	Smoky City Fertilizer.....	11.5	1.29	1.20	9.34	3.14	1.71	12.48	12.00	14.19	.68	1.00	1382
1385	Otis Phosphate.....	12.88	2.79	.....	6.04	4.25	1.56	10.29	.....	11.85	3.07	.....	1385

\* Received after March 15, 1895.

TABLE III.  
DESCRIPTIVE LIST OF STATION SAMPLES.

Sample No.	Brand.	Manufacturer.	Sampled at
1334	Americus Brand Amm. Bone Super..	Williams & Clark Fert. Co.	Portland.
1339	" Corn Phos. ....	" " "	"
1337	" Potato & Cabbage Manure..	" " "	"
1306	" Potato Manure .....	Williams & Clark Fert Co.	Houlton.
1305	Bay State Fertilizer.....	Clark's Cove Fert. Co. ...	Caribou.
1371	Bay State G. G. Fert. ....	" " " "	Orono.
1312	Bay State Seeding Down Fert. ....	" " " "	Bangor.
1356	Bowker's Farm and Garden Phos....	Bowker Fert. Co.....	"
1360	" Market Garden Fert. ....	" " " "	"
1368	" Potato Phosphate.....	" " " "	"
1371	" Potato and Veg. Manure...	" " " "	Caribou.
1361	" Square Brand Bone & Potash	" " " "	Bangor.
1319	Bradley's Corn Phos. ....	Bradley Fert. Co.....	"
1350	" English Lawn Fert.....	" " " "	Portland.
1318	" Eureka Fert.....	" " " "	Bangor.
1291	" Potato Fert.....	" " " "	Houlton.
1289	" Potato Manure .....	" " " "	"
1317	" Sea Fowl Guano.....	" " " "	Bangor.
1290	" X. L. Super .....	" " " "	Houlton.
1293	Cleveland Fertilizer.....	Cleveland Dryer Co.....	"
1292	" High Grade Complete Man.	" " " "	"
1294	" Potato Phosphate.....	" " " "	"
1322	" Superphosphate .....	" " " "	Brunsw'k
1297	Coe's Columbian Brand Amm. Bone..	E. Frank Coe Co.....	Houlton.
1372	" Grass and Grain Fert.....	" " " "	Bangor.
1310	" High Grade Amm. Bone Super.	" " " "	"
1295	" High Grade Potato Fert.....	" " " "	Houlton.
1296	" Special Potato Fert.....	" " " "	"
1330	Crocker's Amm. Corn Phos.....	Crocker Fert. & Chem.Co.	Freeport.
1302	" Potato, Hop & Tob. Phos...	" " "	Caribou.

DESCRIPTIVE LIST OF STATION SAMPLES—*Continued.*

Sample No.	Brand.	Manufacturer.	Sampled at
1328	Crocker's Superior Rye & Oats Phos.	Crocker Fert. & Chem. Co.	Freeport.
1346	Cumberland Conc't Phosphate .....	Cumb'd Bone Phos. Co...	Portland.
1299	" Guano .....	" " "	Houlton.
1298	" Potato Fert .....	" " "	"
1311	" Seeding Down Fert.....	" " "	Bangor.
1301	" Superphosphate.....	" " "	Houlton.
1374	Dirigo Grass and Grain Fert. ....	Sagadahoc Fert. Co.....	Augusta
1369	Farrar's Lawn Phos.....	F. S. Farrar & Co.....	Bangor.
1370	" Potato Manure .....	" " " .....	"
1368	" Superphos.....	" " " .....	"
1357	Gloucester Fish and Potash.....	Bowker Fert. Co.....	"
1348	Grass and Grain Fert.....	Pacific Guano Co.....	Portland.
1325	Great Eastern Gen'l Corn Phos.....	Great Eastern Fert. Co...	Freeport.
1309	" " " Potato Manure...	" " " ..	Caribou.
1323	" " " Grass & Oats Phos	" " " ..	Freeport.
1307	King Phillips Alkaline Guano .....	Clark's Cove Fert. Co....	Caribou.
1327	New Rival Amm. Super.....	Crocker Fert. & Chem. Co.	Freeport.
1233	Nobsque Guano.....	Pacific Guano Co.....	Portland.
1320	Original Coe's Super. of Lime .....	Bradley .....	Newport.
1351	Potato Special Fert.....	Walker, Stratman & Co...	Portland.
1341	Quinnipiac Corn Manure.....	Quinnipiac Fert. Co.....	"
1344	" Grass Fert.....	" " " ....	"
1335	" Market Garden Manure...	" " " ....	"
1345	" Phosphate .....	" " " ....	"
1343	" Potato and Cabbage Fert..	" " " ....	"
1288	" Potato Phos.....	" " " ....	Houlton.
1336	" Potato and Tob. Fert.....	" " " ....	Portland.
1340	" Seeding Down Manure....	" " " ....	"
1364	Read's Standard for all Crops .....	D. H. Foster.....	Bangor.
1365	" Practical Potato Special Fert..	" " .....	"
1366	" Veg. and Vine Fert.....	" " .....	"

DESCRIPTIVE LIST OF STATION SAMPLES—*Continued.*

Sample No.	Brand.	Manufacturer.	Sampled at
1338	Royal Bone Phos.....	Williams & Clark Fert.Co.	Portland.
1367	Sagadahoc Hill and Drill Phos.....	Sagadahoc Fert. Co.....	Augusta.
1373	“ Special Potato Fert.....	“ “ “ .....	“
1314	Soluble Pacific Guano.....	Pacific Guano Co.....	Bangor.
1349	Special for Potatoes and Tob.....	“ “ “ .....	Portland.
1326	Standard A. Brand.....	Standard Fert. Co.....	Freeport.
1281	“ Fertilizer.....	“ “ “ .....	Houlton.
1313	“ Guano.....	“ “ “ .....	Bangor.
1315	“ Potato and Tob. Fert.....	“ “ “ .....	“
1354	Stockbridge Top Dressing Manure ...	Bowker Fert. Co.....	“
1353	“ Seeding Down Manure ..	“ “ “ .....	“
1352	Sweet Corn Brand.....	Walker, Stratman & Co..	Auburn.
1347	Williams & Clark High Grade Special	Williams & Clark Fert. Co.	Portland.
1342	“ “ Potato Phos.....	“ “ “ .....	“

TABLE IV.  
ANALYSES OF STATION SAMPLES.

Sample Number.	Brand.	Moisture.	Nitrogen.	Phosphoric Acid.					Potash.	Sample Number.
				Soluble.	Reverted.	Insoluble.	Available.	Total.		
		%	%	%	%	%	%	%	%	
1334	Americus Brand Amm. Bone Super.....	11.55	2.67	5.07	4.38	1.59	9.45	11.04	1.73	1334
1339	" Corn Phosphate.....	10.57	2.00	4.22	5.69	2.93	9.91	12.84	1.46	1339
1337	" Potato and Cabbage Manure.....	11.7	2.15	2.84	5.43	3.19	8.27	11.46	3.04	1337
1300	" Potato Manure.....	14.48	2.03	5.68	3.12	2.80	8.80	11.60	3.21	1300
1305	Bay State Fertilizer.....	14.02	2.86	7.46	2.35	1.42	9.81	11.23	2.76	1305
1371	Bay State G. G. Fertilizer.....	15.5	2.07	5.42	2.32	2.57	7.74	10.31	2.52	1371
1312	Bay State Seeding Down Fertilizer.....	12.1	1.00	4.78	3.97	2.11	8.75	10.86	1.98	1312
1356	Bowker's Farm and Garden Phosphate.....	15.17	2.01	3.97	4.07	3.73	8.04	11.77	2.43	1356
1360	" Market Garden Fertilizer .....	10.85	2.82	5.26	1.98	2.66	7.24	9.90	9.69	1360
1363	" Potato Phosphate .....	9.7	1.99	3.66	4.13	3.97	7.79	11.76	2.37	1363
1303	" Potato and Vegetable Manure.....	10.98	2.28	6.00	3.69	4.22	9.69	13.91	4.01	1303
1361	" Square Brand Bone and Potash.....	7.28	1.99	1.28	3.65	8.03	4.93	12.96	2.55	1361
1355	" Sure Crop Phosphate .....	13.95	1.00	5.62	3.79	3.81	9.41	13.22	1.39	1355



## ANALYSES OF STATION SAMPLES—Continued.

Sample Number.	Brand.	Moisture.	Nitrogen.	Phosphoric Acid.					Potash.	Sample Number.
				Soluble.	Reverted.	Insoluble.	Available.	Total.		
		%	%	%	%	%	%	%	%	
1316	Bradley's Complete Manure for Potatoes & Vegetables	11.09	3.61	4.84	4.59	1.87	9.43	11.30	5.80	1316
1319	" Corn Phosphate.....	14.70	2.30	7.61	2.33	2.25	9.94	12.19	1.75	1319
1350	" English Lawn Fertilizer.....	8.40	5.23	1.22	6.64	1.75	7.86	9.61	3.65	1350
1318	" Eureka Fertilizer.....	13.90	2.13	6.70	2.69	2.17	9.39	11.56	2.42	1318
1291	" Potato Fertilizer.....	13.12	2.36	6.69	1.89	2.61	8.58	11.19	3.06	1291
1289	" Potato Manure.....	11.00	2.55	3.20	2.71	3.08	5.91	8.99	5.51	1289
1317	" Sea Fowl Guano.....	13.02	2.26	5.13	4.45	2.98	9.58	12.56	1.92	1317
1290	" X. L. Superphosphate.....	14.40	2.46	6.14	2.92	2.43	9.06	11.49	2.43	1290
1293	Cleveland Seeding Down Fertilizer.....	11.20	1.33	3.80	3.84	2.85	7.64	10.49	3.08	1293
1292	" High Grade Complete Manure.....	11.28	2.85	2.15	5.64	3.89	7.79	11.68	6.10	1292
1294	" Potato Phosphate.....	14.00	1.92	3.54	5.90	2.81	9.44	12.25	2.20	1294
1322	" Superphosphate.....	11.95	2.17	2.56	7.50	2.34	10.66	12.46	2.06	1322
1297	Coe's Columbian Brand Amm. Bone.....	9.60	1.46	6.87	2.06	2.79	8.93	11.72	1.33	1297
1372	" Grass and Grain Fertilizer.....	7.55	.91	5.80	3.48	4.25	9.28	14.53	2.25	1372



Sample Number.	Brand.	Moisture.	Nitrogen.	Phosphoric Acid.					Potash.	Sample Number.
				Soluble.	Reverted.	Insoluble.	Available.	Total.		
		%	%	%	%	%	%	%	%	
1310	Coe's High Grade Amm. Bone Super.....	9.62	2.07	7.97	2.07	2.55	10.04	12.59	1.47	1310
1295	" High Grade Potato Fertilizer .....	9.40	2.16	7.70	.34	2.64	8.04	10.68	5.78	1295
1296	" Special Potato Fertilizer.....	10.35	1.83	6.69	2.93	2.71	9.62	12.33	3.71	1296
1330	Crocker's Amm. Corn Phosphate.....	11.40	2.25	6.88	3.14	1.61	10.02	11.63	1.69	1330
1302	" Potato, Hop and Tobacco Phosphate.....	11.60	2.10	7.43	3.06	.96	10.49	11.45	3.51	1302
1328	" Superior Rye and Oats Phosphate .....	13.98	1.31	6.91	3.06	1.59	9.97	11.56	1.82	1328
1346	Cumberland Concentrated Phosphate.....	10.97	3.54	4.55	4.00	2.75	8.55	11.30	6.78	1346
1299	" Guano .....	11.78	1.41	4.48	4.41	1.27	8.89	10.16	1.84	1299
1298	" Potato Fertilizer.....	12.80	2.28	4.38	4.18	3.40	8.56	11.96	1.83	1298
1311	" Seeding Down Fertilizer.....	12.90	1.03	5.85	2.05	1.69	7.90	9.59	2.41	1311
1301	" Superphosphate .....	14.95	1.88	4.35	3.01	1.96	7.36	9.32	1.51	1301
1374	Dirigo Grass and Grain Fertilizer.....	9.3	2.07	2.70	3.82	6.32	6.52	12.84	3.56	1374
1369	Farrar's Lawn Phosphate .....	13.17	4.96	2.21	7.20	2.99	9.41	12.40	4.88	1369
1370	" Potato Manure.....	14.48	2.70	3.25	5.94	3.66	9.17	12.83	3.77	1370

## ANALYSES OF STATION SAMPLES—Continued.

Sample Number.	Brand.	Moisture.	Nitrogen.	Phosphoric Acid.					Potash.	Sample Number.
				Soluble.	Reverted.	Insoluble.	Available.	Total.		
		%	%	%	%	%	%	%	%	
1368	Farrar's Fertilizer .....	15.00	2.26	6.27	2.30	3.65	8.57	12.22	2.29	1368
1357	Gloucester Fish and Potash .....	12.13	1.16	3.72	5.53	3.81	9.25	13.06	1.11	1357
1348	Grass and Grain Fertilizer .....	9.62	1.02	2.60	4.90	1.01	7.50	8.51	1.42	1348
1325	Great Eastern General Corn Phosphate .....	17.00	2.97	1.64	7.10	1.00	8.74	9.74	2.24	1325
1309	" " Potato Manure .....	12.70	2.05	7.46	2.76	1.28	10.22	11.50	3.87	1309
1323	" " Grass and Oats Phosphate .....	7.40	.13	4.14	7.76	2.56	11.90	14.46	1.56	1323
1307	King Phillips Alkaline Guano .....	9.90	1.46	3.29	4.77	2.10	8.06	10.16	3.15	1307
1327	New Rival Amm. Superphosphate .....	13.22	1.25	6.32	3.70	2.09	10.02	12.11	1.04	1327
1333	Nobsque Guano .....	9.42	1.12	4.26	5.00	2.05	9.26	11.31	1.54	1333
1320	Original Coe's Superphosphate of Lime .....	13.12	2.32	6.08	2.95	2.80	9.03	11.83	1.86	1320
1351	Potato Special Fertilizer .....	8.60	1.88	7.25	2.08	1.56	9.33	10.89	6.44	1351
1341	Quinnipiac Corn Manure .....	12.80	1.96	4.73	4.40	3.10	9.13	12.23	1.61	1341
1344	" Grass Fertilizer .....	7.25	4.17	2.12	2.84	1.28	4.96	6.24	3.21	1344
1335	" Market Garden Manure .....	10.81	3.39	4.90	5.49	1.16	10.39	11.55	6.53	1335

Sample Number.	Brand.	Moisture.	Nitrogen.	Phosphoric Acid.					Potash.	Sample Number.
				Soluble.	Reverted.	Insoluble.	Available.	Total.		
		%	%	%	%	%	%	%	%	
1345	Quinnipiac Phosphate .....	13.68	2.35	4.44	5.09	3.01	9.53	12.54	2.35	1345
1343	" Potato and Cabbage Fertilizer .....	11.30	2.37	3.21	2.93	5.64	6.14	11.78	2.91	1343
1288	" Potato Phosphate .....	9.73	2.47	3.83	5.34	3.56	9.17	12.73	2.74	1288
1336	" Potato and Tobacco Fertilizer .....	14.70	2.07	4.29	5.85	2.05	10.14	12.19	3.05	1336
1340	" Seeding Down Manure .....	10.55	1.13	3.80	4.36	1.52	8.16	9.68	1.71	1340
1364	Read's Standard for All Crops .....	14.90	1.02	6.13	1.97	.61	8.10	8.71	3.98	1364
1365	" Practical Potato Special Fertilizer .....	12.60	1.09	2.94	1.41	.41	4.35	4.76	8.30	1365
1366	" Vegetable and Vine Fertilizer .....	12.72	1.88	3.54	2.03	1.38	5.57	6.95	8.77	1366
1338	Royal Bone Phosphate .....	9.40	1.13	3.13	5.08	1.09	8.21	9.30	1.68	1338
1367	Sagadahoc Hill and Drill Phosphate .....	11.70	2.90	3.52	4.09	1.55	7.61	9.16	4.23	1367
1373	" Special Potato Fertilizer .....	14.18	2.72	5.01	1.89	1.39	4.90	8.29	7.05	1373
1314	Soluble Pacific Guano .....	12.25	2.34	3.57	5.98	4.06	9.55	13.61	1.86	1314
1349	Special for Potato and Tobacco .....	12.23	2.45	4.93	4.03	2.92	8.96	11.88	2.72	1349
1326	Standard A. Brand .....	9.00	1.00	1.52	3.61	2.96	8.43	11.39	2.03	1326

## ANALYSES OF SELECTION SAMPLES OF FERTILIZERS

Sample Number.	Brand.	Moisture. %	Nitrogen. %	Phosphoric Acid.					Potash. %	Sample Number.
				Soluble. %	Reverted. %	Insoluble. %	Available. %	Total. %		
1287	" Fertilizer.....	16.87	2.08	5.80	2.45	2.47	8.27	10.72	3.88	1287
1313	" Guano.....	13.88	1.59	4.22	2.16	2.28	6.38	8.66	3.24	1313
1315	" Potato and Tobacco Fertilizer.....	13.70	2.04	6.97	2.31	1.47	9.28	10.75	3.38	1315
1358	Stockbridge Potato and Vegetable Manure.....	10.70	3.24	6.06	1.97	2.47	8.03	10.50	6.93	1358
1354	" Top Dressing Manure.....	10.90	4.80	3.52	1.85	3.61	5.37	8.98	6.51	1354
1353	" Seeding Down Manure.....	10.17	2.46	4.55	3.04	4.61	7.59	12.20	10.19	1353
1352	Sweet Corn Brand.....	10.90	1.62	3.58	3.70	4.17	7.28	11.45	2.04	1352
1347	Williams & Clark High Grade Special.....	10.60	3.53	5.88	3.01	2.89	8.89	11.78	6.24	1347
1342	" " Potato Phosphate.....	9.01	2.47	1.15	5.87	3.56	7.02	10.58	4.30	1342

TABLE V.

COMPARISON OF QUALITIES, MANUFACTURER'S SAMPLES AND STATION SAMPLES.

Brand.	Nitrogen.			Phosphoric Acid.			Potash.		
	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.
	%	%	%	%	%	%	%	%	%
Americus Brand Amm. Bone Sup.	2.47	2.80	2.67	9.00	9.50	9.45	2.00	2.63	1.73
Bay State Fertilizer.....	2.47	2.72	2.86	9.00	9.67	9.81	2.00	2.65	2.76
Bay State G. G. Fert. ....	1.85	2.36	2.07	8.50	9.72	7.74	2.00	2.62	2.52
Bay State Seeding Down Fert....	1.03	2.33	1.00	8.00	9.73	8.75	2.00	2.59	1.98
Bowker's Farm and Garden Phos	1.64	1.86	2.01	8.00	8.28	8.04	2.00	2.21	2.43
Bowker's Potato Phos.....	1.64	1.58	1.99	8.00	9.75	7.79	2.00	1.92	2.37
Bowker's Potato and Veg. Manure	2.50	2.54	2.28	8.00	6.33	9.69	4.00	4.42	4.01
Bowker's Sq. Br'nd Bone & Potash	1.50	1.79	1.99	4.00	6.40	4.93	2.00	2.21	2.55
Bowker's Sure Crop Phosphate...	.82	1.02	1.00	8.00	7.84	9.41	1.00	1.16	1.39
Bradley's Complete Manure for Potatoes and Vegetables .....	3.70	4.10	3.61	8.00	9.44	9.43	6.00	7.16	5.80
Bradley's Corn Phosphate.....	2.06	2.59	2.30	9.00	10.57	9.94	1.50	1.68	1.75
Bradley's Eureka Fertilizer .....	1.65	2.00	2.13	5.00	7.93	9.39	2.00	1.95	2.42
Bradley's Potato Fertilizer.....	2.06	2.11	2.36	9.00	10.67	8.58	3.24	3.07	3.06
Bradley's Potato Manure.....	2.47	2.61	2.55	6.00	7.31	5.91	5.00	5.43	5.51
Bradley's X. L. Superphos. ....	2.47	2.70	2.46	9.00	11.13	9.06	2.00	2.27	2.43
Cleveland Seeding Down Fert....	1.65	1.65	1.33	5.00	9.14	7.64	2.00	2.23	3.08
Cleveland Potato Phosphate.....	2.06	2.16	1.92	8.00	10.47	9.44	3.00	3.21	2.20
Cleveland Superphosphate .....	2.06	2.39	2.17	9.00	9.89	10.06	2.00	2.71	2.06
Coe's Columb'n Br'nd Amm. Bone	1.00	1.33	1.46	9.00	9.45	8.93	1.85	1.68	2.25
Coe's High Grade Amm. Bone Sup.	2.00	1.68	2.07	9.00	9.19	10.04	1.85	2.82	1.47
Coe's High Grade Potato Fert....	2.40	2.22	2.16	8.00	8.31	8.04	6.00	6.64	5.78
Coe's Special Potato Fert.....	1.50	1.67	1.83	9.00	10.24	9.62	3.50	1.94	3.71
Crocker's Amm. Corn Phos.....	2.00	1.90	2.25	10.00	10.53	10.02	1.60	1.72	1.69



COMPARISON OF GUARANTEES—*Continued.*

Brand.	Nitrogen.			Phosphoric Acid.			Potash.		
	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.
	%	%	%	%	%	%	%	%	%
Crocker's Potato, Hop & Tob. Phos.	2.00	2.04	2.10	10.00	10.34	10.49	3.25	3.65	3.51
Crock'r's Superior Rye & Oats Phos	.82	.86	1.31	8.00	8.43	9.97	2.00	1.76	1.82
Cumb'd Conc'. Phos. for Potatoes.	3.30	3.80	3.54	8.00	9.12	8.55	7.00	7.11	6.78
Cum'd Potato Fert.....	2.06	2.16	2.28	9.00	9.81	8.56	3.00	2.88	1.83
Cumb'd Seeding Down Fert.....	1.23	1.20	1.03	8.00	8.34	7.90	2.00	2.11	2.41
Cumb'd Superphosphate .....	2.06	1.95	1.88	8.00	10.26	7.36	2.00	1.65	1.51
Dirigo Grass and Grain Fert. ....	2.00	1.82	2.07	6.00	5.22	6.52	3.50	3.62	3.56
Farrar's Fertilizer .....	2.50	2.56	2.26	9.50	11.50	8.57	2.00	1.63	2.29
Farrar's Potato Manure.....	2.50	2.33	2.70	9.50	10.22	9.17	3.00	3.32	3.77
Great Eastern Gen. Corn Phos....	3.00	3.06	2.97	8.00	9.20	8.74	2.00	3.43	2.24
Great Eastern Gen. Potato Manure	2.50	2.35	2.05	8.00	10.04	10.22	4.00	5.71	3.87
Gr't East'n Gen. Grass & Oats Phos.	....	....	.13	10.00	10.99	11.90	2.00	2.15	1.56
King Phillips Alkaline Guano....	1.23	1.79	1.46	6.50	8.26	8.06	3.00	3.66	3.15
New Rival Amm. Super.....	1.20	1.00	1.25	10.00	11.07	10.02	1.60	1.57	1.64
Nobsque Guano.....	1.15	1.23	1.12	9.00	8.91	9.26	2.00	2.25	1.54
Potato Special Fertilizer .....	1.60	2.45	1.88	9.00	8.49	9.33	5.00	5.83	6.44
Quinnipiac Market Gard'n Manure	3.30	3.89	3.39	8.00	9.43	10.39	7.00	7.47	6.53
Quinnipiac Phosphate.....	2.47	2.74	2.35	9.00	9.38	9.53	2.00	2.72	2.35
Quinnipiac Potato Manure.....	2.47	2.71	2.47	6.00	7.67	9.17	5.00	5.80	2.74
Quinnipiac Seeding Down Manure	.82	1.23	1.13	9.00	9.46	8.16	2.00	2.26	1.71
Read's Standard for All Crops....	.83	1.08	1.02	8.00	8.71	8.10	4.00	3.77	3.98
Read's Practical Potato Spec. Fert.	.83	1.01	1.09	4.00	4.40	4.35	8.00	8.24	8.30
Read's Veg. and Vine Fertilizer..	1.65	1.72	1.88	6.00	5.68	5.57	8.00	8.21	8.77
Royal Bone Phosphate .....	1.03	1.26	1.13	7.00	9.31	8.21	2.00	2.26	1.68
Sagadahoc Hill and Drill Phos....	2.50	2.22	2.90	8.00	9.24	7.61	2.50	4.53	4.23



COMPARISON OF GUARANTEES—Continued.

Brand.	Nitrogen.			Phosphoric Acid.			Potash.		
	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.	Guaranteed.	Manufacturer's Sample.	Station Sample.
	%	%	%	%	%	%	%	%	%
Sagadahoc Special Potato Fert....	3.00	.....	2.72	7.00	.....	4.90	8.00	.....	7.05
Soluble Pacific Guano.....	2.27	2.37	2.34	8.50	9.75	9.55	2.00	2.61	1.86
Standard A. Brand.....	1.25	1.27	1.39	8.00	9.42	8.43	2.00	2.37	2.03
Standard Fertilizer.....	2.00	2.44	2.08	8.00	10.00	8.27	2.00	2.67	3.88
Standard Guano .....	1.23	1.75	1.59	6.50	8.61	6.38	3.00	3.69	3.24
Stockbridge Potato & Veg Manure	3.25	3.43	3.24	6.00	7.71	8.03	7.00	6.18	5.94
Stockbridge Top Dressing Manure	5.00	4.66	4.80	4.00	7.16	5.37	6.00	6.20	6.51
Stockbridge Seeding Down Manure	2.50	2.19	2.46	6.00	7.48	7.59	10.00	10.00	10.15
Williams & Clark High Grade Spec'l	3.70	3.97	3.53	7.00	9.60	8.89	7.00	7.26	6.24

In Table V. a comparison is made of the samples selected by a Station representative, the manufacturer's samples and the minimum guarantees.

The important considerations are the following :

(1.) Fifty-seven brands are involved in this comparison.

(2.) The averages for nitrogen are : Guarantee, 1.99 per cent., manufacturer's sample, 2.14 per cent., Station sample, 2.09 per cent. For available phosphoric acid the averages are : Guarantee, 7.84 per cent., manufacturer's sample, 9.05 per cent., Station sample, 8.58 per cent. For potash : Guarantee, 3.31 per cent., manufacturer's sample, 3.60 per cent., Station sample, 3.42 per cent.

(3.) In the fifty-seven brands, the Station sample as compared with the manufacturer's sample was, in nitrogen practically the same twenty-three times, poorer twenty-two times and better twelve times ; in available phosphoric acid, practically the same fourteen times, poorer thirty-one times and better twelve times ; in potash, practically the same sixteen times, poorer twenty-four times and better seventeen times.

(4.) Comparing the *Station sample* with the *minimum guarantee*, the Station sample was, in nitrogen, practically the same twenty-seven times, poorer nine times, better twenty-one times ; in available phosphoric acid, practically the same twenty times, poorer seven times, better thirty times ; in potash, practically the same seventeen times, poorer fourteen times, and better twenty-six times.

It is quite customary for manufacturers to state a minimum and a maximum guarantee for the percentages of the ingredients of their goods, as for instance the guarantee for available phosphoric acid would be 8 to 10 per cent. The above comparisons indicate that the manufacturers do not intend to do much more than make good the minimum guarantee, and that this is all the purchaser can safely expect.

It is gratifying to note that as a rule the fertilizers sold in the State are well up to this guarantee. Indeed, there is no case which appears to be an attempt to defraud, although in a few instances the particular lots of goods sampled are not quite as good as they should be.

MAINE STATE COLLEGE, }  
Orono, Me., 1895. }